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Abnormal Growth of Spirogyra Cells.

By Emily L. Gregory.

(Plate CXXV.)

Some *Spirogyra* filaments were obtained for class work from the greenhouse of the Biological Department of the University of Pennsylvania, about the last of January, 1891. These were soon noticed to present an appearance of branching quite unlike that occurring in the ordinary process of reproduction. The regular routine of class work prevented any continued study of the processes of development, which soon showed themselves to be caused by the attacks of some low organisms, probably the monads described by Zopf. The only definite results obtained from such desultory study as could be given them at odd times have reference to the peculiar manner of growth caused by the irritating organism.

In many cases the malformation caused by parasites preying on Algæ is of a similar nature to that occurring in higher plants. In other words, the abnormal growth seems to be governed by the necessities of the irritating organism and adapts itself in a greater or less degree to the needs of the latter. Familiar examples of this are the so-called *Vaucheria* galls, whose morphological significance is still a matter of doubt. Whether the gall arises from the metamorphosis of a fruit branch, as some claim, or whether an entirely abnormal growth from the side or end of the *Vaucheria* cell, it usually attains a size and shape to accommodate the little rotifer and its eggs. So also in the case of the galls of certain species of *Oscillaria*, caused by the entrance of the zoospores of

Chytridiæ. The growth here does not much exceed that required for the development of the new organisms, and the shape assumed is one entirely suited to the needs of the parasite.

It was the difference in this respect which first excited curiosity in the case of the *Spirogyra* cells in question. The organisms causing the hypertrophy were not easily noticed, while the manner of growth suggested the normal development of root-like organs.

The first appearance of disease was that of separation between the cells of a filament. Then the chlorophyll bands began to lose their hold on the wall, shrinking away from it, at the same time losing their closeness of coil until they become nearly parallel with the long axis of the cell. Although no measurements were taken, this probably came from the growth of the cell without the chlorophyll contents keeping pace with it. The whole process lasted several weeks, and during all this time no traces of foreign organisms entering the cells of the *Spirogyra* were found. This is, however, easily accounted for by the irregularity of the observations and the lack of any high powers of magnification. The later development was such as to suggest the probable presence of certain monad forms which are known to prey upon different species of *Spirogyra*, causing more or less disorganization and disease.

If this were true, there were two very marked peculiarities in their development and results, differing from any account I have been able to find in relation to the development history of these little organisms. These are the singular distortion of the *Spirogyra* cells, before referred to, and the peculiar conduct of the monads after escaping from the cells.

The first appearance of distortion was a lengthening of the wall on one side of the cell so as to produce almost a spiral coil. This seldom occurred in a long filament, but generally in one of one, two or three cells. From this bent or curved side of the cell was sent out a tube or branch, nearly at right angles with the long axis. This branch grew out more or less winding, tapering conically and often ended in a slight extension of a spherical shape. Very often this tube branched dichotomously, the branches then curling and twisting so they resembled small root-like appendages, so common to many Algæ forms. Several short filaments were found, consisting of only three or four cells, coiled several times,

and from each coil a tube projecting, afterward branching and the branches coiling and twisting toward the ends. The chlorophyll bands extended into these tubes, but with a feeble, unhealthy look and a loose coil which intimated rapid disintegration. Another perhaps equally common method of branching was from each end of the cell, or from the free ends of two cells still holding fast together. Here the appearance was still more root-like. The extending tube was never more than half the diameter of the cell and very often, forking several times it formed a little snarl of branches. This growing from the end of the cell sometimes happened before the cells of the filament separated, so that from the end of one cell projected a tube into the next, running perhaps half its length.

Cells in this condition in other ways never appeared perfectly healthy. Frequently the spirals were intact and the nucleus still in position, but generally the chlorophyll coils had straightened out, broken in places and appeared contracting into spherical bodies. This breaking up of the chlorophyll bands, according to the general method of development of the monads, we would suppose corresponds with the so-called amœboid stage of the parasite when it gorges itself with the chlorophyll of the cell. Singularly enough nothing whatever could be detected of the monad itself during the formation of unnumbered green spherical bodies, filling the cells more or less closely. The only apparent cause of the formation of these bodies was the collection of the chlorophyll masses about the pyrenoids and the gradual separation of these from each other. This is the more strange as the spores of the ordinary monad forms which attack the Algæ are not so small as to render them difficult of detection with the lens used, which was a number seven, of Leitz. Whatever the explanation may be, these bodies were formed inside the cells in immense numbers. In nearly all cases they retained their chlorophyll till after escaping from the cell, generally also in a bright, healthy condition; seldomer was it found to have turned a dull brownish color like the remains of chlorophyll described by Zopf as having been ejected by the monad.

These bodies generally escaped from the cell at night and hat through some break in the cell wall having no relation

whatever to the peculiar branches described before. In only one case did I notice any connection between these tubes and the occupation and departure of the monads. That is to say, the extraneous branches often contained a few smaller spherical bodies, but they seemed to originate and remain mostly in the original cells of the filament. Only in one case was their escape seen and this happened at about 11 A. M. A cell from which just the beginning of a tube projected, contained about four or five of these bodies, together with some slight remains of chlorophyll bands. Two of these worked their way slowly up to the projecting tube and passed into it and then out of the cell. The opening in the wall was apparently caused by the action of some secretion from the green monad as it disintegrated almost momentarily while I was watching it. The debris remained some time after both had escaped. The monads assumed the pear shape common to all such bodies when escaping through an orifice. Shortly after they were free they assumed a spherical form and were soon lost among the countless numbers of similar bodies. This was the only instance in which the escape was noted, because, as stated before, the exodus appeared to take place in the night. Every morning hordes of these green monads were found floating about among the broken cells. For several days after their exit from the cells they remained in about the same condition as at first. Then a change appeared; on examining the material in the morning certain ones had become very much enlarged, measuring at least twice as much in diameter as the others. These larger ones then went through a series of amœboid motions lasting several hours, but terminating in no special change which was lasting. As this seemed a regular habit of the enlarged ones several were watched closely through all the changing forms, and sketches made. The gyrations of one were followed through a period of about three hours and about forty sketches made. Others were noticed and a striking uniformity of change in shape appeared. To show this more clearly I requested one of my students to watch and sketch the evolutions of one, and the sketches were almost identical with my own. This peculiar series of motions never resulted in actual division, though appearing often as though this was the end in view. The whole returned

again to a spherical form and remained passive as before. Other cases were noticed where actual division took place, but this was never connected with the amœboid movement.

As the days passed, other changes occurred; a considerable number, after discharging the green parts of their contents, threw out cilia and remained as long as watched in this amœba condition. Some of these were watched closely during change of form and color, particularly one, which corresponds very closely to one figured by Zopf, as one stage of the monad *Pseudospora parasitica*, Cienk., which is well known for its fondness for *Spirogyra* cells. There were at least three distinct species of amœba found among the remains of these bodies, but their origin in all cases could not be determined.

The singularity connected with these organisms is the lack of proof that they were the developed form of certain monad spores which had bored their way into the cell, together with the fact that if they did have such an origin, they did not develop into the amœba stage inside the cell, but simply gorged themselves with food and then issued forth in swarms to pass through other stages outside. This, with the peculiar hypertrophy exhibited, which in only one case seemed to be of any use to the parasite, are the two features considered worthy of mention.

DESCRIPTION OF PLATE CXXV.

1.—*Spirogyra* cell showing beginning of tube formation at *a*. Contents of growing portion colorless but granulated.

2, 3 and 4.—Cells showing different stages of this development. The inner lines show remains of chlorophyll bands.

5.—A cell showing the second method, viz., the growth of tube into the adjacent cell. This seen at *a*. *c*. Cell nucleus. *d*. Another tube growing outward.

6.—Cell with only a slight projection, but from which the green bodies *a* are about to escape.

7.—Green body after having escaped.

8 and 9 —Amœba forms originating from such bodies as 7.

On the Names of two Species of Rhus.

Rhus cotinoides, Nutt.—Regarding the synonymy of this plant, perhaps a few words may be said in addition to the revision already published by Prof. Sargent in Garden and Forest, iv. 340. As there shown, the earliest name for this plant is that of Nuttall, *Cotinus Americanus* (1842–'50), and ac-

cording to Engler's division, the combination remains unchanged; but if *Cotinus* is made a section of *Rhus*, *Cotinus Americanus*, Nutt. becomes *R. Americanus* (Nutt). (=*R. cotinoides*, Nutt. MSS. in Herb).

The name *Rhus cotinoides*, by which this plant has long been designated, is commonly attributed to Nuttall; the latter, however, first applied it only as an herbarium name. It is said, moreover, to have been first published in 1860 (Chapman's Fl. Southern States); but the name doubtless belongs to Cooper, who published it in 1859 (Rep. Smithsonian Institution for 1858, 250), citing as a synonym, *Cotinus Americanus*, Nutt., which is equivalent to a formal publication.

Rhus typhina, L. (1760).—Dr. Britton has discussed (Bull. Torr. Bot. Club, xvii. 269) the synonymy of this plant, and points out that the first name, *Datisca hirta*, L. (Species Plantarum, 1037, 1753), which is commonly cited as a synonym of this plant, is debarred as the original name for the Staghorn Sumach, because of Engler's publication (DC. Monog. Phan. iv. 425, 1883) of the combination *Rhus hirta*, Harv. (Mss. in Herb. Kew) as a synonym of *Rhus tridentata*, Sond. Dr. Britton's decision would seem to be in strict accordance with the principle to be observed, "Once a synonym always a synonym."

But in following this principle to the letter, perhaps the fundamental meaning is overlooked. It is true that 1883 marks the first appearance of the binominal *Rhus hirta* (Harv. Mss. in Herb. Kew), Engler, and would thus appear to preclude the use of this name for our Staghorn Sumach. But before holding fast to this position, we must, it seems to me, inquire whether the specific term *hirta*—unquestionably first applied to our plant—can be lawfully appropriated in any other combination than in one for our species. This term is doubtless the permanent member of the binomial to designate our Sumach, and in whatever genus the species is finally placed, its original specific name *hirta*—if not antedated by an earlier application to another species—must belong where first applied. *Hirta*, therefore, never was a synonym, nor can it ever become one; and in forming from *Datisca hirta*, L., the combination *Rhus hirta*, Harv. l. c. for an African species of *Rhus* (*R. tridentata*, Sond.), an invasion was made on

a name unconditionally preoccupied. *Rhus hirta* (L.), to be legitimately written only for our Sumach, has never been proposed, and is not a synonym in fact—*Rhus hirta* (Harv. Mss. in Herb. Kew), Engler, l. c. is.

Moreover, in maintaining *Rhus hirta* (L.) for the Staghorn Sumach, we follow the ornithologists' interpretation of "Once a synonym always a synonym."

I should, therefore, propose that *Rhus typhina*, L. (1760) be replaced by *Rhus hirta* (L.) (=*Datisca hirta*, L., 1753), not *Rhus hirta* (Harv. Mss. in Herb. Kew), Engler (1883).

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[Mr. Sudworth's notes touch on the question of what importance is to be placed on the publication of a name as a synonym. His first-mentioned species appears to have been first alluded to in print by Torrey and Gray (Fl. N. A. i. 217, 1838), where it was doubtfully referred to the European *R. Cotinus*, L., and "*R. cotinoides*, Nutt. in herb. acad. Phila.," printed as a synonym. The appearance of this name dates then from 1838, and we fail to see any reason why it should not be maintained. It is quite equivalent to an author publishing two names for a plant, the first of which is preoccupied. His second case is similar, but not identical. *Rhus tridentata*, Sond., should in my view not stand, on account of the earlier publication of *Rhus tridentata*, Thunb., which would bring in *R. hirta*, Harv., for *R. tridentata*, Sond. —N. L. B.]

Notes on Peronosporaceæ.

The following list of Peronosporaceæ includes species found in the vicinity of Brookings, S. D., during the summer of 1891. The region covered is that included within a radius of five miles from the city. Specimens of all the species have been collected upon the college farm, also, which lies close to the city and is situated upon prairie uplands.

PERONOSPORA ARTHURI, Farlow.

This species was very plentiful during July on *Œnothera biennis*. Plants growing in the wild flower garden suffered most. Many plants were entirely stripped of their leaves.

Septoria Œnotheræ often occurred in company with the mildew and together they did much damage. *Œnothera Missouriensis* growing in the garden was somewhat affected by the mildew.

PERONOSPORA CYPARISSIÆ, DeBary.

The mildew of our spurges seems to belong to this species rather than to *P. Euphorbiæ*. All my specimens agree with DeBary's description. The fungus grew plentifully on *Euphorbia glyptosperma* and *E. maculata*. It appears on the under side of the leaves, petioles and branches, and is most plentiful on the central branches, causing them to assume an upright mode of growth. It has aided very materially in checking the growth of these weeds.

PERONOSPORA EFFUSA (Grev.), Rabenh.

Very plentiful on spinach (*Spinacea oleracea*) and goosefoot (*Chenopodium album* and *C. hybridum*). It has been very destructive to all hosts and especially so to spinach. All of these plants grown in the college gardens were so badly affected as to be hardly fit for any use at all, and were destroyed long before the season was over. It was often associated with a "leaf-spot" fungus (*Stegonospora Spinaceæ*, E. & E. n. sp. in litt,) which bids fair to become a serious pest.

PERONOSPORA LEPTOSPERMA, DeBary.

Common on *Artemisia biennis* during June and early July. It was usually destructive to the affected leaves, but did little injury to the plant as a whole.

PERONOSPORA PARASITICA (Pers.), DeB.

This species has done good service in killing off many of the crucifers of weedy habits. It has been very plentiful. The plants found in this vicinity affected by it are: *Brassica nigra, B. alba, B. Sinapistrum, Sisymbrium canescens, Lepidium intermedium, L. Virginicum, L. sativum, Capsella Bursa-pastoris, Nasturtium hispidum, N. Armoracia* and *Raphanus sativus*. The damage done to the two last hosts was slight, however, so the mildew has been decidely beneficial.

PERONOSPORA VIOLÆ, DeB.

Quite plentiful on pansies (*Viola tricolor*) in flower gardens during the latter part of August and early part of September. Very injurious.

SCLEROSPORA GRAMINICOLA (Sacc.) Schroet.

This fungus has been plentiful on *Setaria viridis*, often in company with *Pericularia grisea* (Cke.), Sacc. It did much damage to that weed and thus did good work for the farmers.

PLASMOPARA HALSTEDII (Farl.), Ber. & DeT.

Probably the most destructive mildew in this locality. It was collected in abundance on *Helianthus tuberosus* and *Iva xanthiifolia*. On the former host it was often found completely covering the under side of every leaf of the plant, which it usually killed. It was most plentiful on this host during a rather wet spell of weather in early July. On *Iva* it seldom covered the entire plant, but was abundant enough on the lower leaves to cause them to fall off and do serious injury to the plant. This species of *Iva* is very plentiful around Brookings, yet I was unable to find a single unaffected patch of it during July and early August.

PLASMOPARA PYGMÆA (Ung.), Schroet.

Early in June a small amount of this species was found on an undetermined species of *Anemone*, but was not found again. Though occurring in but a limited area it was quite injurious to the host.

CYSTOPUS BLITI (Biv.), DeBary.

Very plentiful from June to September on *Amarantus albus*, *A. retroflexus* and *A. blitoides*. It injured the leaves considerably, but did not seem to affect the "seed-bearing" of the plant very much. It remains later than any other species that I have observed.

CYSTOPUS CANDIDUS (Pers.), Lev.

During the season this species has been collected on *Brassica nigra*, *B alba*, *Lepidium Virginicum*, *L. intermedium*, *Nasturtium Armoracia*, *N. hispidum*, *Sisymbrium officinale*, *Capsella Bursa-pastoris* and *Lepidium sativum*. It was quite injurious in many cases, especially on horseradish, where, in connection with *Ramularia Armoraciæ*, it did much damage.

CYSTOPUS TRAGOPOGONIS (Pers.), Schroet.

By far the most destructive species in this genus. Entire patches of *Ambrosia artemisiæfolia* and *A. psilostachya* were so badly injured by it as to ripen but little or no seed. Even along

the dry, dusty streets of the city this was true. Though the fungus was found in June and early July it did not become so destructive until the dry weather of the latter part of July and August.

A few specimens of a *Cystopus* probably belonging to this species was found on *Artemisia biennis*, usually associated with *Peronospora leptosperma*, DeB. It was not very injurious on this plant however, and never occurred in any quantity.

The rainfall for the summer months of the years 1890 and 1891 was as follows:

1890.	in.	1891.	in.
June	7. 91	June	4. 09
July	1. 54	July	2. 01
August	2. 07	August	1. 38

During the two years preceding 1890 the amount of rainfall was much less, being but 5.53 in. for the whole three months in 1888, and 5. 03 in. in 1889. During the past summer there were several heavy rains in June, and they were distributed in such a way as to keep up a tolerably luxuriant vegetation throughout the month. The mildews and white rusts were plentiful at this time, but apparently did but little damage. The greatest amount of injury was done during the dry weather of July and August. The fungi had then a good hold on the host plants, many of which were not able to withstand both dry weather and fungous injuries.

On the whole the observations of the season have shown a greater abundance of these fungi here than one would naturally expect to find in so dry a climate. The number of species, while not large, is surprising, and the abundance of each species is very much more so. Another noticeable feature is the injuriousness of such a great majority of the species found.

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Parasitic Fungi as Related to Variegated Plants.*

BY BYRON D. HALSTED.

During the past two years a large number of variegated plants have been examined with reference to the presence of parasitic fungi. Attention was first called to the subject by a study of the foliage of a variegated ash, which had its leaves

* Abstract of paper before Torrey Botanical Club, February 9th, 1892.

badly spotted with a species of *Coniothyrium*, while ordinary ash trees were free from the same fungus. Some of the variegated plants, both of the hardy sorts and those grown under glass, have been badly infested with leaf blights. Of the former may be named the delicate and popular bedding plant called plantain lily (*Funkia undulata*, var. *variegata*) several sorts of variegated pelargoniums and alternantheras. Among the most affected of the tender plants of the variegated class may be mentioned the *Aspedistra lurida*, var. *variegata*, *Ficus elastica*, var. *variegata*, *Abutilon Thomsoni*, *Codiæum* sp. (crotons), *Dieffenbachia*, sp., *Hydrangea hortensis*, var. *variegata*, *Phrynium variegatum*, *Dracæna*, sp., etc.

Particular attention was paid to the fungi upon the *Funkia* and *Aspedistra*, as they, at sight, manifested some strong points of resemblance. There was no difficulty in growing the anthracnose from one to the other host in cultures, and as the microscopic structure of the fungus upon both is the same, there seemed to be sufficient reason for giving it the name of *Colletotrichum omnivorum*. It remains to be proved that some of the other hosts attacked by a *Colletotrichum* are bearing the same fungus.

The following is an alphabetical list of the genera containing one or more variegated species that are specially subject to the attack of fungi, with the genera of the latter so far as they have been determined:

Abutilon Thomsoni and *A. megapotamicum*—Colletotrichum, Phyllosticta.

Acalypha musica and others—Phyllosticta.

Acuba Japonica—Colletotrichum.

Ageratum Mexicanum—Phyllosticta.

Alocasia, several species—Colletotrichum, Sac fungus.

Alternanthera paronychoides and others—Phyllosticta.

Aralia pentaphylla, var. *variegata*, *A. Sieboldi*, var. *variegata*—Leptosphæria.

Aspedistra lurida, var. *variegata*—Colletotrichum.

Astilbe Japonica, var. *variegata*—Leptosphæria.

Begonia Rex, and others—Cercospora, Phyllosticta and Colletotrichum.

Centaurea, a variegated form—Septoria.

Cissus discolor—Glœosporium.
Codiæum triumphans, and many others—Phyllosticta, Glœosporium.
Coleus Verschaffeltii, and others—Phyllosticta.
Cyclamen Persicum, and others—Phyllosticta.
Cypripedium, several variegated species—Colletotrichum, Phyllosticta.
Dieffenbachia, several species—Glœosporium, Colletotrichum.
Dracæna Goldieana, D. Lindeni and others—Colletotrichum, Glœosporium, Lœstadia, Phyllosticta.
Elæagnus glabra, var. *variegata*—Colletotrichum, Sac fungus.
Eranthemum sp.—Phyllosticta.
Evonymus Japonicus, var. *variegatus*—Coryneum.
Ficus Parcelli, F. elastica, var. *variegata*—Glœosporium.
Fraxinus, a variegated form—Coniothyrium.
Funkia undulata, var. *variegata*—Colletotrichum, Phyllosticta.
Hedera Helix, var. *variegata*—Phyllosticta, Colletotrichum.
Hibiscus Syriacus, var. *variegatus*—Phyllosticta.
Hydrangea hortensis, var. *variegata*—Phyllosticta.
Impatiens Sultani, var. *variegata*—Phyllosticta.
Ipomœa Bona-nox—Phyllosticta.
Iresina Herbstii—Colletotrichum, Sac fungus.
Livistonia, a variegated form—Colletotrichum, Glœosporium.
Maranta bicolor, and others—Læstadia, Colletotrichum.
Nepeta Glechoma, var. *variegata*—Phyllosticta, Glœosporium.
Nerium Oleander, var. *variegatum*—Glœosporium.
Ophiopogon Jaburan, var. *variegatus*—Colletotrichum.
Pandanus Veitchii, and others—Glœosporium.
Passiflora, a variegated form—Phyllosticta.
Pelargonium, several variegated varieties—Ascochyta, Colletotrichum.
Phrymium variegatum—Colletotrichum, Glœosporium.
Pittosporum viridiflorum, var. *variegatum*—Phyllosticta.
Ptychosperma, a variegated form—Colletotrichum.
Reinechia variegata—Glœosporium (?).
Rhodea Japonica—Glœosporium (?).
Richardia albo-maculata—Phyllosticta.
Sambucus nigra, var. *variegata*—Phyllosticta.

Sarracenia Drummondii—Colletotrichum, Sac fungus.
Solanum jasminoides, var. *variegatum*—Septoria.
Spiræa, a variegated form—Diplodia.
Stevia, a variegated form—Phyllosticta.
Vinca major, var. *elegantissima*—Phyllosticta, Septoria.

In the above list of fifty genera, which includes more than a hundred species of variegated plants that have been examined, it will be seen that there are three genera of fungi that lead all others. Phyllosticta is met with twenty-four (24) times, Colletotrichum nineteen (19), and Glœosporium twelve (12) times. It is not the purpose here to enter into the causes of etiolation or variegation, or to draw any well defined conclusions from the facts. The ordinary green form of the species has been studied in many instances, as for example in the ash mentioned at the outset, in the *Abutilon*, *Ageratum*, *Ficus*, *Impatiens*, *Nepeta*, *Passiflora*, *Pelargonium*, and others, with the result that they are much less frequently attacked than the variegated sorts. Furthermore, in some plants the etiolated part occupies large portions of the leaf, and as a rule the portions without the chlorophyll are the most susceptible. In the *Aspidistra*, for example, the one half of the long leaf may be green and the other white, in which case the latter is with few exceptions the only one attacked. In the *Hydrangea* the middle of the leaf is etiolated, and here the blight first begins its destructive work. The case is somewhat similar in phrynium. In *Passiflora*, *Pelargonium*, *Sambucus*, *Ageratum*, *Hibiscus*, *Dracæna* and several others, the white is distributed in blotches near to the margin of the leaf, in all of which cases the decay due to the fungus produces a ragged edge. When the variegation is quite evenly distributed over the leaf in like manner, the parasite is widely scattered, and the whole leaf decays, as in the *Dieffenbachia* and *Abutilon*. There seems to be no question that the variegated leaves are more susceptible, and that likewise the etiolated parts are the ones first attacked. The absence of green in a leaf, from this it is to be inferred, is a source of weakness, and upon this account the etiolated tissue is less able to resist the attacks of the fungus germs.

Speaking generally, a variegated plant lacks capacity for the best work, and the gardener, in propagating a variegation, no

matter how it may have originated, is propagating a weakened plant in so far as it has its normal amount of chlorophyll reduced. The fact that some sorts of the self-blanched celery have been found more susceptible to blights and decay bears directly upon this point. It is a pity that so many of our choicest variegated plants blight easily; it is, however, natural that they should do so. Even a fungus parasite will take the line of least resistance.

Notes on the Flora of Southwestern Connecticut.

By L. N. Johnson.

Every season during the past ten years it has been the good fortune of the writer to spend some weeks collecting in southwestern Connecticut. As some of the finds were of interest these notes have been prepared for the purpose of placing them on record.

The face of the country is diversified, consisting of nearly parallel ridges running north and south, with their slopes about equally covered with woods of oak, chestnut, hickory and maple, and with cultivated ground. Every valley carries a stream, and following these a few miles to the south we come to the plain, which, varying in width, borders Long Island Sound, and furnishes the peculiar vegetation of the salt meadows and marshes. Most of the collecting here described was done in the valley of Mill River, and in the shore region around Bridgeport.

The ridge which runs north from Bridgeport finds its highest point in Tashua Hill, about six miles back from the shore. In the woods on its western slope, and in the adjacent valley, is an admirable collecting ground. Here we find *Cypripedium acaule* growing abundantly, and with it *Pogonia verticillata*, *Liparis liliifolia*, and a number of other orchids, including rarely *Cypripedium parviflorum*. Here too grows *Aristolochia Serpentaria*. It was formerly common, but is now nearly exterminated. The writer procured specimens from a neighbor, but could not induce him to tell the exact locality, as it is still prized as a medicine, and the secret carefully guarded by the lucky finder of its haunts.

In the level meadows along the river grow half a dozen *Habenarias*, most conspicuous of which are *H. psycodes*, with spikes sometimes a foot or more in length, and the more beauti-

ful but very rare *H. fimbriata*. Here too grows *Iris prismatica*, and on a little point projecting into a pond *Hierochloë odorata*. In the lowland woods, among other interesting plants, *Viola rotundifolia* is frequent, and on higher ground *Viola pedata*. In this same valley a few specimens of *Pentstemon lævigatus* have been found, while *P. hirsutus* has not been seen, though it occurs a few miles to the eastward. *Drosera rotundifolia* occurs here, though not abundantly. Its habit is perhaps worth notice. It grows on the surface of a smooth ledge over which a little water is continually oozing, but there is very little soil.

In a swamp on the southwestern slope of Tashua Hill *Sium Carsonii* grows in great abundance, almost choking the brook in some places. It is confined to the bed and immediate banks of the stream. The locality is at present in danger of extermination by the dam of the new reservoir, which is in process of construction.

On the wooded ridge west of Tashua is a locality where *Woodwardia areolata* is abundant (over a small area). With it grow *Aster acuminatus*, *Pyrola elliptica* and *P. rotundifolia*, the two *Chimaphilas* and numerous other plants of interest. Not far distant *Botrychium lanceolatum* has been found, and still farther west is a swamp which is a favorite haunt of *Calla palustris*, and in the same vicinity *Carex umbellata* was found by the roadside, though recent search has failed to reveal any more specimens.

Following down Mill River some four miles, most of the way through rich collecting ground, we come to Samp Mortar Rock, a much-visited and very picturesque locality. Here in the stream one can find *Utricularia vulgaris* and *U. intermedia*, the latter creeping among the stones, and sending its naked bladder-bearing branches down to the water below. In the swift places the stones are covered with mats of *Podostemon ceratophyllus*, which may be seen in fruit in August. In the sand along the edge of the stream is *Callitriche Austini*, while in the river here, as elsewhere, *C. verna* is not uncommon, though not assigned to New England at all in the last edition of the Manual. Back from the river, on the sandy slopes in an old pasture, are several large patches of *Rubus cuneifolius*. Further up in the edge of the woods are *Oxalis violacea*, and *Aralia hispida*, and in the clefts of the over-

hanging rocks there is an abundance of *Asplenium Trichomanes*, and *Carex trisperma*. A few rods below, among the bushes, in an old pasture surrounded by woods, a single specimen of *Tradescantia Virginica* was seen. It was probably introduced, though it is hard to see how unless by the birds.

As one nears the shore he finds some species not noted before. In the woods north of Bridgeport an occasional specimen of *Microstylis unifolia* may be found, and along the shores of the ponds *Elatine Americana* occurs in profusion in several places. With it is *Myriophyllum ambiguum*. Of the latter we have found three forms, which seemed well-marked, growing within a few feet of each other. The first, which seems to agree with the var. *capillaceum* of the Manual, grows entirely under water. Where the water has receded, leaving the plants on the mud, the lower capillary leaves are somewhat dried up, while the new leaves at the tip are broader, and pectinate or even linear—like the typical form, in short. On the hard, gravelly bank, where the water can only cover it in the spring, grows a form with short ascending, or almost erect stems, with the leaves all pectinate, serrate or linear—var. *humile* (Raf.) apparently.* This last form bears no superficial resemblance to var. *capillaceum*, but the typical form at once shows the connection.

On a hill above Moody's Pond is a field where a large colony of *Aletris farinosa* grows, and a short distance the other side of the pond is the only locality in which the writer has seen *Cuphea petiolata*. The pond itself during the last summer has furnished several specimens of *Ceratophyllum demersum*, var. *echinatum*, in fruit.

Nearer the shore, but not on the marshes, several things of interest are found, notably *Spiranthes simplex*. This is probably overlooked because of its close superficial resemblance to *S. gracilis*, though on comparing them the differences are apparent. In a large number of specimens examined the root was uniformly a single tuber, while in *S. gracilis* it has always more than one tuber, usually two. With this plant grow *Eupatorium hyssopifolium* and *Chrysopsis falcata*. *Helenium autumnale*, and

* As shown by Dr. Morong, *humile*, Raf. is the older name for this species.—Ed.

Sagina apetala are not rare along the roadside, the latter usually accompanied by *Tissa rubra*. On the dry knolls *Liatris scariosa* is rather common. Here and there are clumps of *Triodia seslerioides*, but usually near the shore.

The brackish marshes furnish a long list of plants, only a few of which can be mentioned here. Among them are *Liparis Læselii*, (rare in only a single swamp, so far as known), and *Utricularia clandestina*, which is common but not often found in flower. It forms mats on the mud in the bogs, or, in one case, on the surface of a shallow fresh pond. Other characteristic inhabitants are *Œnothera fruticosa*, *Poterium Canadense*, and in the salt meadows, *Gerardia maritima*, *Pluchea camphorata* and *Samolus Valerandi*, var. *floribundus*, with here and there *Salicornia mucronata*. On the borders of one marsh a single specimen of *Habenaria ciliaris* was found, and *Cnicus spinosissimus* is an occasional find.

In Stratford *Hibiscus Moscheutos* is abundant, and on the sandy shore of a brackish pond *Sabbatia stellaris*, *Aster tenuifolius* and *A. subulatus* are common.

Tissa marina is a common beach plant, and on the sand at Black Rock grows *Diodia teres*, with *Polygonum articulatum*, *Triplasis purpurea*, *Aristida tuberculosa*, *Salicornia herbacea*, *S. ambigua*, and other characteristic beach plants. *Scirpus pungens* is present in two forms, well-marked by habit, though the writer has been unable to detect any difference in fruit. One is much stouter than the other, and forms much larger spikes, several in a cluster, while the other has one small one and looks quite different.

The list given above might be indefinitely extended, but these are the most important finds. Of those mentioned several are not recorded in the Manual as occurring in New England.

New California Plants.

By S. B. Parish.

Psoralea rigida.—Erect, 1–2 ft. high, viscid above and sparsely villous with short black and white hairs intermingled; leaves pinnately 3-foliate, on inch long petioles; leaflets as long, ovate-lanceolate, glabrous and rigid; stipules lanceolate; peduncles shorter than the leaves, bearing a globose head, inch

high, twenty-flowered; bracts shorter than the flowers, lanceolata, deciduous; calyx two-thirds length of the corolla, its teeth acuminate, the lower twice the length of the upper; corolla 8 lines long, whitish or ochroleucous, the keel with a large purple spot at the apex; petals very long-clawed; the tenth stamen free one-third its length; ovary densely villous; pod one-fourth inch long, not wrinkled, closely conformed to the shining dark seed.

Dry hills, Oak Grove, San Diego Co., June, 1882. (Parish 643).

OPUNTIA BERNARDINA, Engelm. in herb.

Loosely branched shrub, 2–4 ft. high, several-stemmed from the base; joints cylindrical, 3-12 inches long, with a slight scurfy pubescence, never deciduous; tubercles of the younger joints oblong and very prominent, shorter and less marked on the older; spines yellow, ¼-1 inch long, one or two usually longer and stouter than the others; flowers in a dense cluster at the ends of the previons year's joints; inner segments of the perianth yellow, outer greenish, or dull red; fruit ovate, less than an inch long, deeply umbilicate, the tubercles bearing a single short spine, becoming at length dry, and only then deciduous, usually fertile, but few-seeded; seed flat, one-fourth inch in diameter, the rhaphe channeled.

Dry hills and mesas from the Coast Range to the San Bernardino Mts., in the San Jacinto and San Bernardino Valleys.

This is the only Cylindropuntia in the region indicated, and apparently does not extend to the coast region or the deserts. Specimens distributed by the National Herbarium, ticketed "New Mexico, Geo. R. Vasey, February, 1881," were probably collected in Southern California, where Mr. Vasey was at that date.

O. basilaris, E. & B., var RAMOSA. Spreading, and the joints freely branching above; joints and fruit glabrous; otherwise as in the species.

Dry washes and gravelly benches of the Colorado and Mojave deserts, and occasionally in the less arid regions; dry ridges, 7000 ft. alt., on the northern side of the San Bernardino Mts., near Bear Valley; San Mateo Pass; San Jacinto Plains as far as

Box Springs; Temecula; Coast Range at least to the Santa Margarita River.

This variety is the common form of the species in Southern California; only near the summit of the Cajon Pass have I seen plants basilar branched as defined by Engelmann and figured in Pac. R. R. Rept., iv. t., 13 f. 5.

GILIA (DACTYLOPHYLLUM) MACULATA.

Inch high, diffusly branched from the base, sparsely pubescent; leaves entire, two lines long, broadly linear, thick and strongly carinate, obtuse, acerose; earlier flowers nearly sessile in the lower forks, later ones crowded above; calyx-lobes nearly equal, much like the leaves, but with a narrow hyaline margin, ciliate; the narrowly campanulate tube of the corolla not exceeding the calyx, the limb rotate, 2 lines wide; filaments inserted on the base of the tube; anthers exserted; seeds few.

Borders of the Colorado desert, at Agua Caliente, San Diego Co. W. G. Wright.

Near *G. demissa*, Gray, from which it differs in its entire leaves, obtuse and ciliate calyx-lobes, narrower corolla, and exserted anthers.

Varieties of Ranunculus abortivus, L.

In the list of Plants of Arkansas, by John C. Brannar and F. V. Coville, (Ark. Geol. Survey, Vol. iv. p. 155), we find recorded three varieties of *Ranunculus abortivus;* viz., *grandiflorus*, Engelm., *Harveyi*, Gray, and *micranthus* (Nutt.), Gray. Two of these are credited to the writer and the third, though not credited, was also collected by him. It may be interesting to botanists to know that the varieties *grandiflorus*, Engelm., and *Harveyi*, Gray, are the same form, specimens having been sent to Drs. Gray and Engelm. and independently named by them. The first appearance of this form in print, so far as the writer knows, was in "Patterson's Check List," as *R. abortivus*, var. *Harveyi*, Gray. Specimens were sent to both about the same time, but so far as I can remember to Dr. Gray *first*. The writer had some correspondence about this form with Dr. Watson, thinking it must be a distinct species from *R. abortivus*, an opinion he is still inclined to hold from a knowledge of the plant in the field. It

grows on ledges of rocks high above valleys, where *R. abortivus, type*, or *R. abortivus micranthus* were never seen. There is fully two weeks difference in the time of flowering. The petals exceed the calyx considerably. The plant is more slender, the branches more spreading and graceful, and the head of achenes smaller. It may be possible that specimens bearing both these names are in the collection left by the writer at the Ark. Ind. Univ. We hardly think this possible and presume the name *R. abortivus*, var. *grandiflorus*, was found in the MSS. of Dr. Engelmann and incorporated in the above list. The var. *grandiflorus* should be dropped. F. L. HARVEY.

ORONO, ME., February 5th, 1892.

Additions to the Flora of Nebraska.

BY G. D. SWEZEY.

The following species not before noted from the State have lately been added to our herbarium:

Mountain and western species extending into the western part of the State:

Clematis Scottii, Porter. Sheridan Co.

Argemone Mexicana, L. var. *albiflora*, DC. Common westward.

Stanleya pinnata (Pursh.) Britton. Sheridan Co.

Psoralea digitata, Nutt. Brown Co.

Lathyrus ornatus, Nutt. Common westward.

Ribes setosum, Lindl. Dawes Co.

Mentzelia nuda, Torr. & Gray. Keith Co., Box Butte Co.

Erigeron macranthus, Nutt. Brown Co.

Actinella scaposa, Nutt. var. *linearis*, Nutt. Franklin Co.

Gilia linearis (Nutt.) Gray. Sheridan Co.

Krynitzkia Californica, Gray. Keith Co.

Calochortus Nuttallii, Torr. & Gray. Sheridan Co.

Eastern and European species extending into the wooded belt along the Missouri River: (These were all collected at Nehawka, Cass Co.)

Caulophyllum thalictroides (L.) Michx.

Lychnis Githago (L.) Lam.

Hypericum Ascyron, L.

Desmodium Illinoense, Gray.
Cratægus mollis (Torr. & Gray) Scheele.
Osmorrhiza Claytoni, (Michx.) B. S. P.
Convolvulus arvensis, L.
Seymeria macrophylla, Nutt.
Anychia Canadensis (L.) B. S. P.
Asprella Hystrix (L.) Willd.

DOANE COLLEGE, CRETE, January 2, 1892.

The Validity of the Oldest Specific Name.

The method adopted by Mr. Sudworth (see Vol. xviii. 289) appears to result from a logical application of the law of priority, and will probably in time find acceptance among botanists, as it is already doing among zoologists. If the identical name for both genus and species is to be avoided, it is the genus that must go—and yet I presume nobody will propose to abolish *Nasturtium*, *Ustilago*, *Opuntia*, etc., for this reason! Some years ago I brought this question forward in a short article dealing with nomenclature (*Science Gossip*, 1888, p. 276), and since then have noted down cases of the kind when I have come across them. The following are additional to those given by Mr. Sudworth:

Present Name.	Linnean Name.	Correct Name by Priority.
Nasturtium officinale, R. Br.	*Sisymbrium nasturtium.*	*Nasturtium nasturtium* (L.).
Guazuma tomentosa, H.B.K.	*Theobroma guazuma.*	*Guazuma guazuma* (L.).
Pimenta officinalis, Lindl.	*Myrtus pimenta.*	*Pimenta pimenta* (L.).
Cinnamomum Zeylanicum, Breyn.	*Laurus cinnamomum.*	*Cinnamomum cinnamomum* (L.).
Persea gratissima, G.	*Laurus persea.*	*Persea persea* (L.).
Lagenaria vulgaris, Sw.	*Cucurbita lagenaria.*	*Lagenaria lagenaria* (L.).
Manihot utilitissima, Pohl.	*Jatropha manihot.*	*Manihot Manihot* (L.).
Ustilago segetum (Bull.).	*Chaos ustilago.*	*Ustilago ustilago* (L.).

Probably many other cases might be found if a diligent search were made.

T. D. A. COCKERELL.

Institute of Jamaica, Jamaica, W. I., Nov. 17th, 1891.

Botanical Notes.

A Singular Rudbeckia hirta. Prof. Halsted's note in the October BULLETIN, entitled "A Double-Headed *Rudbeckia*," called my attention to a specimen I collected in a meadow on the Gap Hills, Lancaster Co., Pa., June 14, 1889. On examination, I find the plant to be a very curious freak. It consists of two stems ascending from a short cylindrical root-stalk. From

the place where the two stems leave the root-stalk they are flattened in the ratio of about 1:2. In some places the stems are grooved, plainly showing the double stem, while in other places there is nothing to show the fact except the flat stem. One stem is terminated by two heads crowded apart at an angle; the number of rays in this double head is twenty-eight. The other stem is terminated by a group of three heads, two barely separated and the third separated at a slight angle; the number of rays in this group is forty. The arrangement of the leaves is affected much by the abortion—some are alternate, as they should be; others are opposite, and many are irregular. In the case of the irregular leaves, some spring from the stem almost opposite, some beside each other, and still others at various angles to each other, according as the buds were situated on the joined stems. In one instance two buds seem to have sprung from the same spot, and the leaves continue as one for a short distance, and then separate into two. JOHN K. SMALL.

Phlox maculata, L., *in Waterford, Conn.* About four miles from New London, in a meadow beside Jordan Brook, is a small but flourishing station of the above-mentioned plant. So far as observed, it is confined to two patches, the larger of which comprises an area of thirty or thirty-five square yards, the smaller less than half as large, lying thirty or forty rods farther down the brook. The plant grows very thickly in both these patches, and when in bloom fairly illumines the meadow. The interest in this station lies in the question whether the plant is or is not indigenous here. Only a little way from the meadow is a farm-house which has been occupied by the same family for several generations. There is no tradition in this family as to its ever having been introduced, and no one now living remembers a time when it did not grow in its present position. Furthermore, it is not found in any garden in the neighborhood, and, in fact, I have never seen it in cultivation in this vicinity. All these facts point to its being a native. On the other hand must be mentioned its very limited distribution, its occurrence so far north and east of its recorded range, and its nearness to human habitations. If introduced it must have been at some remote time in the past. At any rate

it has maintained itself for many years, is still flourishing, and must be looked upon as thoroughly established.

CHARLES B. GRAVES, M.D.

Note on the Genus Henrya. I find that American botanists (Asa Gray, Proc. Amer. Acad. xxi. 406; J. Donnell Smith, Bot. Gaz. xvi. 198, and J. N. Rose in litt.), are all in favor of restoring *Henrya*, Nees (*Acanthaceæ*) and they ought to know best; therefore my *Henrya angustissima*, in Journ. Linn. Soc. xxvi. 111, and Hooker's *Icones*, t. 1971, must have a new name. I propose calling it *Neohenrya angustissima.*

W. BOTTING HEMSLEY.

KEW, Jan. 16, 1892.

Index to Recent Literature Relating to American Botany.

Acalypha Virginica. A Goiran. (Bull. Soc. Bot. Ital. i. 52, 1892). Reported as introduced along the Adige in northern Italy.

Additional Evidence on the Communicability of Peach Yellows and Peach Rosette. E. F. Smith. (U. S. Depart. Agric., Div. of Veg. Path. Bull. I., profusely illustrated).

Brasilianische Nutzpflantzen. Theo. Peckolt. (Pharm. Rundsch. ix. 219-222, x. 34).

Canadian Hepaticæ, named by W. H. Pearson, of Manchester, collected and distributed by John Macoun, 1891.

This distribution completes the Bryophyta and includes 116 specimens, accompanied by a printed list containing descriptions of two new species, with illustrations. It has been a great deal of work to get out these valuable sets of mosses and hepatics, and much credit is due for its accomplishment in so short a time. We are informed that a few remaining sets of the mosses will be sold at six dollars a hundred. E. G. B.

Carnation Rust—The. (Gard. & For. v. 18).

Note and illustrations of *Uromyces caryophyllinus.*

Copernicia cerifera. Thomas Morong. (Bull. Pharm. Jan. 1892, reprint).

An interesting account of the Paraguayan Palma negra and the many uses it is put to by the natives, its great hardness and

durability, and the well-known "Carnaüba wax" that is obtained from its leaves and berries. Dr. Morong also alludes to other species locally known as Palma blanco and Palma colorado.

Dew Berries—The. L. H. Bailey. (Cornell Univ. Agr. Ex. Station Bull. 34, 376).

Rubus Canadensis, R. hispidus and *R. trivialis* and their cultivated forms are described and figured.

Echinocereus Leonensis. (Monatschrift für Kakteenkunde, i. 66).

A description of the plant from Monterey, with illustration.

Echinocereus pectinatus, var. *robustus.* L. Wittmack. (Gartenflora, xxxix. 513, 514, t. 1331).

El Chicaldte (*Argemone Mexicana*). (El Estudio, iv. 23).

Epidendrum Godseffianum, Rolfe. (Gard. Chron. xi. 136).

Flora of Fulton County, Ill.—Collecting List for 1892. H. S. Pepoon. (Lewiston, Ill.).

Flora of Western North Carolina and Contiguous Territory. John K. Small and A. A. Heller. (Mem. Torr. Bot. Club iii. 1-39. Issued Feb. 20th, 1892. Price 50 cents).

This is an account of a very successful collecting expedition made last summer. The following plants are described as new: *Thalictrum macrostylum* (*T. Cornuti*, var. *macrostylum*, Shuttlw., in dist. of Rugel's plants), and *Smilax rotundifolia*, var. *crenulata.* The rare *Verbena riparia*, Raf., was found at two stations, and *Asarum Virginicum*, var. *grandiflorum*, Michx., on Wilson's creek. In addition to these the following are apparently here first reported from south of Virginia: *Thalictrum purpurascens, Papaver somniferum, Arenaria Grœnlandica, Viburnum cassinoides, Lonicera Japonica, Osmorhiza longistylis, Ligustrum vulgare, Veronica Anagallis, Euphorbia marginata* and *Eatonia Dudleyi.*

The account is supplemented by an enumeration of the flowering plants and ferns collected, and by a list of the mosses by Mr. Small.

Fontinalis.—Tableau méthodique et Clef dichotomique du Genre. J. Cardot. (Revue Bryologique xviii. 81-86, 1891, reprinted).

This is a preliminary key to the long promised revision of the genus, and includes thirty-two species, several American ones

being divided and only one, *F. mollis*, Mueller, being unknown to the author. E. G. B.

Grasses of the Southwest. Geo. Vasey. (U. S. Depart. Agric. Division of Bot. Bull. No. 12).

Bulletin No. 12 is Part II. of Dr. Vasey's valuable work on the grasses of the desert region of Western Texas, New Mexico, Arizona and Southern California.

The fifty species figured are: *Elionurus tripsacoides, Hilaria rigida, Paspalum distichum, P. lividum, P. pubiflorum, Phalaris intermedia*, var. *angusta, Aristida purpurea, Stipa pennata, S. Scribneri, Oryzopsis membranacea, O. fimbriata, Muhlenbergia Buckleyana, M. Neo-Mexicana, M. Schaffneri, M. depauperata, Lycurus phleoides, Sporobolus argutus, S. Buckleyii, S. interruptus, S. tricholepis, S. Wrightii, Trisetum Hallii, T. interruptum, Chloris Swartziana, Trichloris pluriflora, T. verticillata, Schedonardus Texanus, Pappophorum apertum, P. Wrightii, Cottea pappophoroides, Scleropogon Karwinskianus, Munroa squarrosa, Triodia acuminata, T. albescens, T. eragrostoides, T. grandiflora, T. Nealleyi, P. pulchella, T. stricta, T. Texana, T. trinerviglumis, Diplachne fascicularis, D. imbricata, D. Reverchoni, D. rigida, D. viscida, Eragrostis curtipedicellata, E. lugens, E. oxylepis, E. Purshii* and *Elymus Sitanion.*

The plates are very beautiful, the detail work being especially fine. Dr. Vasey will shortly publish another volume, "Grasses of the Pacific Coast."

Hepaticæ Americanæ. Prepared by L. M. Underwood and O. F. Cook, 1891.

We have received decades XI. and XII. of this fine series of exsiccatæ, including species from Mexico collected by Pringle; Florida and Georgia, Underwood; Louisiana, Langlois; Connecticut and New Hampshire, Evans; Washington, Piper; and California, by Miss Ida Teed. The following genera are represented: *Aneura, Calypogeia, Dumortiera, Fimbriaria, Fossombronia, Frullania, Jungermania, Kantia, Liochlæna, Pallavicinia, Plagiochila, Porella* and *Radula.* E. G. B.

Hepaticæ—An Arrangement of the Genera of. By A. W. Evans. (Trans. of the Conn. Acad. Vol. iii. 1892 reprint).

This pamphlet will prove an excellent guide for the arrange-

ment of a large herbarium, and a valuable index to the synonymy of the genera. It follows strictly the laws of priority and contains an index of names and synonyms, as well as references to the original place of publication. To the valuable library and kind assistance of Prof. D. C. Eaton, the author makes due acknowledgment. E. G. B.

Il Black-rot sulle Viti presso Firenze. U. Martelli. (Nuovo. Gior. Bot. Ital. xxiii. No. 4, reprint).

Observations on *Physalospora Bidwelli*, Sacc. in Italy.

Masdevallia Shuttleworthii. G. Sommer. (Gartenflora, xxxix. 457, t. 1329).

Mosses—Some New Species from the Pribylov Islands, Behring Sea. Collected by Jas. M. Macoun. N. C. Kindberg. (Ottawa Naturalist v. 179, Jan. 1892, reprinted).

Three new species and two new varieties are described: *Ceratodon heterophyllus, Didymodon Baden-Powellii, Webera canaliculata*, var. *microcarpa, Bryum Froudei* and *Polytrichum alpinum*, var. *microdontium.* The reprint has been distributed with two names corrected, but the names as printed will have to stand, even though the author may have wished it otherwise.

Mosses from Behring Sea, collected by Jas. M. Macoun. N. C. Kindberg. (Ottawa Naturalist, v. 195, 1892).

Four new species are described: *Dicranoweisia obliqua, Dicranella polaris, D. cerviculata* and *Barbula subcuneifolia.* E. G. B.

New or Little-Known Plants. C. S. Sargent. (Gard. & For. v. 52, illustrated).

A description of *Smilax Pseudo-China* and remarks on its adaptability as a garden plant.

Night-Flowering Cacti. (Gard. xli. 102, illustrated).

Descriptions of *Cereus Lemairi, C. grandiflorus, C. Macdonaldiæ, C. nycticalus, C. Napoleonis, C. fulgidus, C. triangularis, C. coccineus* and *C. rostratus*, cultivated at Kew.

Notes on the Cone-Bearers of Northwest America—I. J. G. Lemmon. (Gard. & For. v. 64).

Pinus Californica, Loiseleur, in Nouveau Duhamel (1816 in part, excluding characters of the seeds), *P. tuberculata*, D. Don, in Trans. Linn. Soc. 1837, *P. radiata*, D. Don, same date,

and *P. insignis*, Douglas, in London Arboretum, 1844, are, according to the author, the synonymy of the Monterey pine. The editor of Garden and Forest admits the possibility of Loiseleur's plant being the species now commonly known as *Pinus insignis*, but excludes the name on the basis that the description of the seeds is faulty and adopts the next oldest specific name, *P. tuberculata*, Don.

Notes on Pollination. Alice Carter. (Bot. Gaz. xvii. 19).

Notes on Trees on the Grounds of McGill University. Sir William Dawson. (Canadian Rec. Sci. iv. 407).

On the Relation of Certain Fall to Spring Blossoming Plants. Aug. F. Foerste. (Bot. Gaz. xvii. i.)

Our Trees. John Robinson. (Publ. by the Essex Inst., Salem, Mass., 1891).

A collection of popular essays on the trees, both native and cultivated, of Salem and its immediate neighborhood. These articles written for the Salem Gazette and now brought together in book form, show a good deal of originality in collecting and putting together a mass of historical facts of local interest.

Patterson's Numbered Check-List of North American Plants, North of Mexico. H. N. Patterson. (Large 8vo. pp. 158, Oquawka, Jan., 1892).

This most useful catalogue of North American Plants was advertised in our last number, but it is desirable to place its publication on more permanent record. The number of species and varieties of Flowering Plants, Ferns and Fern-allies indicated by this list is 12,794, the number of species being 10,706. It has evidently been prepared with much care and is beautifully printed. It is by no means complete, however, as will be very apparent from the statement that there are at least twenty-five additional species and varieties of Ranunculaceæ in addition to the two hundred and thirty-four listed, a considerable number of them published, it should be said, after Mr. Patterson's manuscript went to press. The value of the work is enhanced by a capital index. N. L. B.

Plant-Bearing Deposits of the American Trias—The. L. F. Ward. (Reprint Bull. Geol. Soc. Am. iii. 23-31).

The author divides the plant-bearing Trias of America into

four different areas, viz: Connecticut Valley, New Jersey and Pennsylvania, Virginia, North Carolina and Western. One hundred and nineteen species have been named, of which only thirty-four are common to two or more of the areas. The number of species common to the several basins are arranged in tabular form, so that the distribution may be seen at a glance. From it we may learn that the only two species which occur in both the eastern and western areas are *Cheirolepis Münsteri* and *Palissya Braunii*. There is also a table showing the percentage of common forms to the total number of forms in each area. The article ends with an attempt to correlate the American and foreign strata and the result is such as to show the importance of palæobotany in this connection. A complete list of the American Triassic species would not have made the article unwieldy, and while the author's object is accomplished without such a list, its addition would have been both of interest and value.

A. H.

Physalis, or Husk Tomato. (Cornell Univ. Agric. Ex. St. Bull xxxvii, 381).

Descriptions and figures of *Physalis pubescens*, *P. Peruviana*, *P. capsicifolia* and *Solanum muricatum*.

Principles and Methods of Geologic Correlation by Means of Fossil Plants. L. F. Ward. (Reprint Am. Geol. ix. 35-47).

The importance which palæobotany has assumed in the determination of the age of strata is dwelt upon. The author cites as an illustration the clays of Gay Head, Mass., which had been announced by stratigraphical geologists at one time or another to belong to the Miocene, Pliocene and even Quarternary age. Recent discoveries of fossil plants, however, show that at least a part of the strata are undoubtedly Cretaceous, as many of the leaves are identical with those from the Amboy Clays of New Jersey. The author incidentally raps the botanists, who, he says, are so accustomed to have the entire structure of a plant for study that they have no patience with the mere fragments upon which the palæobotanist often has to rely for determination. He claims that the necessary close study of these fragments has so sharpened the powers of observation in the latter that they are now able to act the part of teacher to the botanists. Thus he

quotes the fact that the generic importance of nervation in leaves was first discovered by the study of fossil types, whereas the botanist frequently concerns himself so entirely with the mere form of the leaf that his figures and descriptions are frequently of no value to the palæobotanist. Another point, and an important one from the geological standpoint, is that the correct determination of a genus is of small importance compared to the exact description and portrayal of the specimen, the vital point being that these shall be so exact that there shall be no doubt as to the identity of a type wherever it may again be found. These criticisims might well be carefully considered by all who are engaged in descriptive work.

In describing the methods which should guide in the study of geologic correlation by means of fossil plants, a plea is made for as wide a comparison as possible with foreign forms, which are frequently transitional, and thus avoid such an error as was made in the case of our Laramie flora. The importance of tabulating the species of plants common to separate areas of supposed identical strata is urged and such a table of distribution is given for the plants in the Triassic areas of the United States.

A. H.

Silva of North America, Vol. III. Anacardiaceæ—Leguminosæ. Charles Sprague Sargent. (4to. pp. 141, Plates XCVIII-CXLVII).

The trees described and illustrated in this volume of the Silva are as follows: *Cotinus Americanus, Rhus Metopium, Rhus typhina, Rhus copallina, Rhus vernix,* L. (*R. venenata,* DC.), *Rhus integrifolia, Eysenhardtia orthocarpa, Dalea spinosa, Robinia Pseudacacia, R. Neo-Mexicana, R. viscosa, Olneya Tesota, Ichthyomethia piscipula, Cladrastis lutea, Sophora secundiflora, S. affinis, Gymnocladus dioicus, Gleditsia triacanthos, G. aquatica, Cercidium floridum, C. Torreyanum, Parkinsonia aculeata, P. microphylla, Cercis Canadensis, C. Texensis, Prosopis juliflora, P. pubescens, Leucæna glauca, L. pulverulenta, Acacia Farnesiana, A. Wrightii, A. Greggii, Lysiloma latisiliqua, Pithecolobium Unguis-cati, P. brevifolium* and *P. flexicaule.*

Rhipsalis Regnellii, n. sp. G. A. Lindberg. (Gartenflora, xxxix. 118-124, figs. 31, 32.)

Some Observations on the Bahamas and Jamaica. J. R. Rothrock. (Proc. Am. Philos. Soc. xxix. 145, reprint).

The Aspect of Trees in Winter. (Gard. and For. v. 50.)

With illustration of a branch of *Quercus tinctoria.*

The Comparative Morphology of the Fungi. James Ellis Humphrey. (Am. Nat. xxv. 1055).

The Bearberry in Central Nebraska. Ch. E. Bessey. (Am. Nat. xxv. 1030).

Arctostaphylos Uva-ursi is reported from the basin of the Long River, Custer County.

The Effect of Mechanical Movement upon the Growth of Certain Flower Organisms. H. L. Russell. (Bot. Gaz. xvii. 8).

The Future of Systematic Botany. John M. Coulter. (Proc. Am. Ass. Adv. Sci. xl. 1891, reprint).

Thrinax Morrisii. Wendl. (Gardn. Chron. xi. 104, with illustrations.

The description of a new palm from Anguilla, W. I.

Ueber einige Lobeliaceen des Wiener Herbariums. A. Zahlbruckner. (Annalen K. K. Nat. Hist. Hof. Mus. Wien. vi. Nos. 3 and 4, 1891 reprint).

Five new species of *Centropogon* from Bolivia, Peru and Ecuador, are described as well as five new species of the genus *Siphocampylus. Synphoranthera polystachya*, Boj. Mss., is published for the first time.

What is a Diatom? Charles F. Cox. (Jour. N. Y. Mic. Society, viii. 1-28).

This a most entertaining and instructive paper. The author does not claim to have settled the question propounded, but he has certainly added materially to the sum total of our knowledge upon the subject. He shows that a study of these interesting organisms, so low down in the scale of life, brings before us most of the leading problems in biology.

The structure and life-history of the diatoms, together with the reason for assigning them to the vegetable kingdom, are ably discussed, as are also the different theories which have been framed to account for their power of motion.

Incidentally the writer pays a tribute to the diatomists who, despite the ridicule often encountered, have labored so untiringly

at the markings of diatoms. Their constant demand for better lenses has led to the great improvements in objectives which have been made during the past few years, and has resulted in the production of these wonderful lenses which have proved of such great value to the biologist and rendered practicable the whole science of bacteriology.

C. H. K.

Wheat Rust : Is the Infection Local or General in Origin? H. L. Bolley. (Agric. Sci. v. 259).

Your Weeds and Your Neighbors. C. F. Milspaugh. (West Va. Agri. Ex. Sta. ii. 121).

Proceedings of the Club.

MEETING OF FEBRUARY 9th, 1892.

The President in the Chair, and twenty-five persons present.

The following named persons were elected active members: Mr. John Cocks, Dr. Wm. C. Rives, Mrs. Sarah J. Van Sicklen and Dr. C. C. Howard.

Mr. Ganong of Harvard University was elected a corresponding member.

An amendment to the Constitution, providing for two Vice-presidents instead of one, was adopted.

Dr. T. F. Allen and Mr. Thos. Hogg were elected Vice-presidents. Professor Byron D. Halsted was elected Corresponding Secretary in place of Mr. E. P. Bicknell, who resigned that office.

The following resolution was adopted: That to promote greater uniformity and correctness in the pronunciation, orthography and nomenclature of botanical names, a committee of three be appointed having cognizance of these and kindred subjects, to be called the Literary Committee, who are requested to report their observations and suggestions pertaining thereto, as often as shall seem to them expedient.

Dr. Britton exhibited a specimen of *Læflingia squarrosa*, collected by Mr. H. J. Webber in Nebraska, this being a station for the plant much further north than any hitherto reported.

Judge Brown described an interesting collection of New York plants, accompanied by many drawings, which he had been

shown at the British Museum of Natural History, by Mr. Wm. Carruthers, the Chief of the Botanical Department of that institution. The collection is in book form, and is prefixed by the following statement:

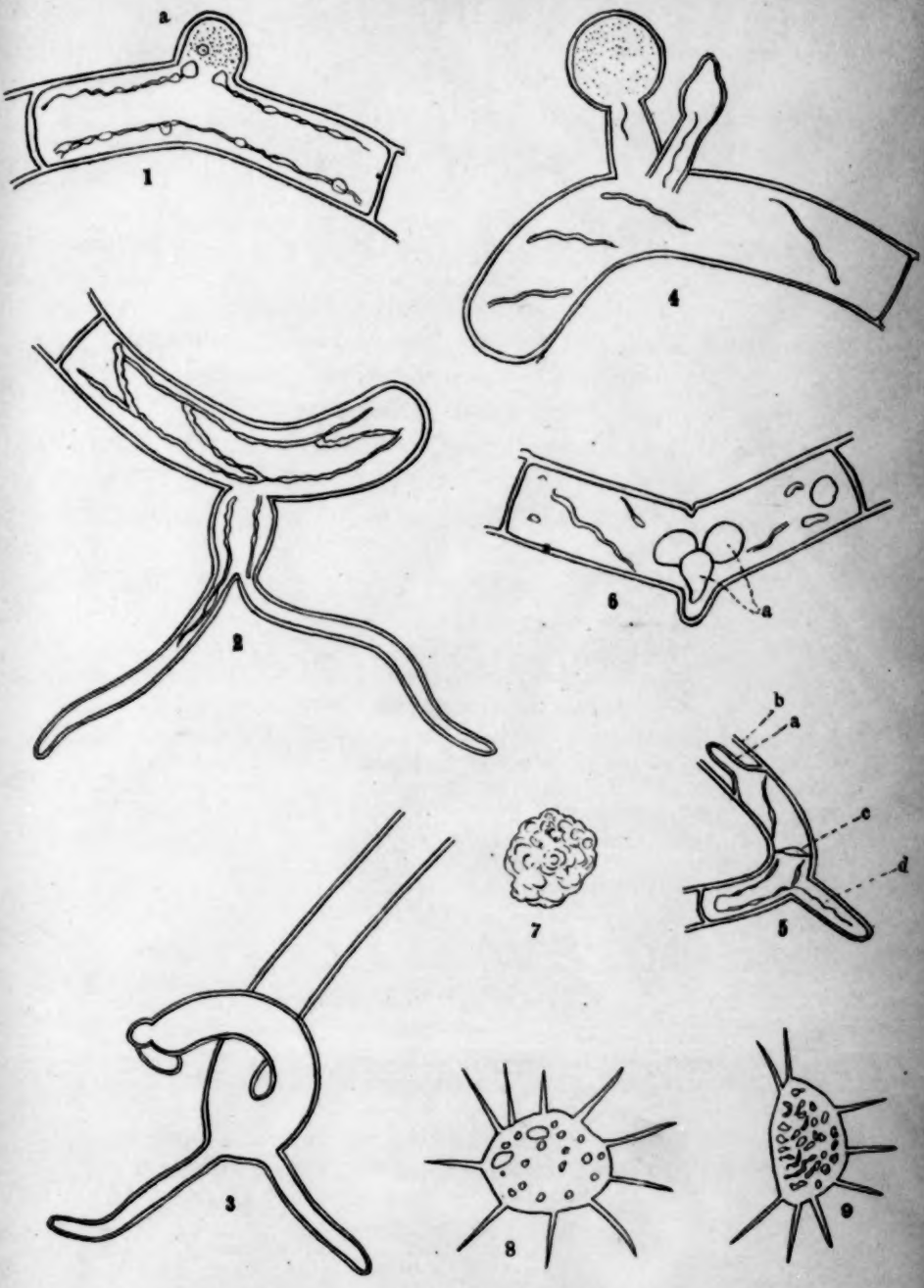
"This manuscript, which has never been printed, contains a part of the Flora of New York, and was composed by a lady, the daughter of the Governor, Cadwallader Colden, well-known for his botanical works, and a physician as well. This lady married a doctor of medicine, Farquhar, a Scotchman by birth, and she died soon afterwards. Some of the names are according to her father and according to Gronovius, and some are according to the Brandenburg Dr. Schœpff, who has read this work. The trivial names are according to Linnæus."

"This work is a remarkable one, because it is that of a lady who possessed such a love for botany that she learned Latin, and judging by its nature is so worthy and correct that it contains many, even minute, things."

This is written by F. von Langenheim, a Hessian captain in the "Feldjager" Corps, New York, May, 1782.

Dr. Britton alluded to Governor Colden's "Plantæ Coldenghamiæ in Provincia Noveboracensi Americes sponte crescentes, quas ad Methodum Cl. Linnæi sexualem Anno 1742, etc.," published in the Acta Societ. Reg. Sci. Upsala, 1749-1753, pp. 81-136, as the earliest special contribution to the Flora of the State.

Professor Byron D. Halsted presented the announced paper of the evening upon "Parasitic Fungi as related to Variegated Plants," illustrated by specimens and lantern views.



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